



## **The Geological record of environmental change**

*Utah: Woodside Canyon*

### **Voice Over**

A good example of a basinal setting lies to the south of Gentile Wash in Woodside Canyon.

### **John Howell**

What we see here are a series of hummocky cross-stratified sandstones with broad, sweeping hummocks, and the key thing to know out here is there is an absence of mudstones and siltstones between the hummocky beds. That means we're in the lower part of the shoreface, just like the succession we saw in Gentile Wash.

Overlying these sandstones we see a blue-grey siltstone. This lacks any sandstone interbeds and tells us what ..... offshore. The surface between the hummocky cross-stratified sandstone and the offshore deposits represent an increase in water depth of about 15 or 20 metres, therefore we would call that surface a flooding surface, and it represents a parasequence boundary.

### **Voice Over**

Here's a proximate example of a flooding surface.

### **John Howell**

Back in Gentile Wash in the parasequence we walked through previously, we see the coal that marked the top of that interval. Overlying that coal we see this sandstone body which contains a series of low-angle, plainer laminations, and also some trough cross-stratification. Also crucial is the presence of this pitted, burrowing, mottling marks on the surface of the rock. These are upper shoreface rocks that were deposited at water depths between 8 and 10 metres. This coal was deposited on top of the coastal plain at, or slightly above, sea level. Therefore when we see rocks deposited at about 8 or 10 metres, overlying rocks deposited above sea level, that has to represent an increase in the relative water depth. This is a parasequence boundary, or a flooding surface. The other key thing to note here is that the flooding surface isn't completely plainer. There's actually a degree of erosion and incision, up to about half a metre along the surface locally.